CORTEZ III SERVICE CORPORATION
NASA/GODDARD SPACE FLIGHT CENTER
CODE 239, BLDG 27
GREENBELT, MD 20771
FAX (301) 286-1774

DATE: 1-24-01 ____ **#PAGES** (including cover sheet)

TO: Stan Schneider
AT: NPOESS Integrated Program Office
PHONE (VOICE/FAX)

FROM: PATTY MANALANSAN, IMPORT/EXPORT SPECIALIST
PHONE: (301) 286-4579

IF YOU DO NOT RECEIVE ALL TRANSMITTED SHEETS, PLEASE CALL
(301) 286-4579

Comments:

REF: Case 0040-01

Please review & advise if attached is accurate. A reply is requested within ten (10) days. Thank you,

Patty

DTC CASE REFERRAL DOCUMENT

ADMIN USE	DATE STAFFED JAN 17 2001	DTC CASE NUMBER TA 0040-01

APPLICANT: Harris Corporation

	Advisory Opinion	X	Agreement - [Mfg], [Tech Assist],]Distribution]		Brokering Request

DTC CASE OFFICER: [illegible]
DTC Comments:

Recommendations and Comments Are Requested From:

X	DTRA/LD		NEA/RA		DRL/MLA	✓	Transmittal Letter
						✓	Attachments, stated on appl
X	NASA		EAP/RSP		OES		Tech data/Descrip Literature
							Statement of Work
	ENERGY		EUR/RPM		PM/RSAT		Order/Ltr of Intent/Contract
						✓	Copy of Agreement
	DOT/USCG		AF/RA		NP/CBM		Copy of previous Approvals
							End Use Certificate/DSP-83
	COMMERCE		WHA/PPCP		DTC/CEB		Import Authorization
							Other (videocassette, etc.)
	L/PM		SA/RA		DTC/		Nothing
						7	# of Collated Sets
	PKRC		EUR/PRA		PM/ECNP		

REPLY HERE AND RETURN TO DEPARTMENT OF STATE, OFFICE OF DEFENSE TRADE CONTROLS, WASHINGTON, D.C. 20520-0206. Recommendations within 25 working days of date staffed are appreciated. **PROVIDE COMMENTS FOR ANY RECOMMENDATION TO DENY OR RETURN WITHOUT ACTION (RWA).**

RECOMMENDATION & COMMENTS:

	APPROVE		APPROVE *WITH* PROVISO		RWA		DENY

COMMENTS:

Typed/Printed NAME AND OFFICE SYMBOL SIGNATURE

DATE: Telephone Number:

DTC CASE REFERRAL DOCUMENT

ADMIN USE	DATE STAFFED JAN 17 2001	DTC CASE NUMBER TA 0040-01

APPLICANT: Harris Corporation

	Advisory Opinion	X	Agreement - [Mfg], [Tech Assist],]Distribution]		Brokering Request

DTC CASE OFFICER: [illegible] Da Silva
DTC Comments:

Recommendations and Comments Are Requested From:

X	DTRA/LD		NEA/RA		DRL/MLA	✓	Transmittal Letter
						✓	Attachments, stated on appl
X	NASA		EAP/RSP		OES		Tech data/Descrip Literature
							Statement of Work
	ENERGY		EUR/RPM		PM/RSAT		Order/Ltr of Intent/Contract
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						7	# of Collated Sets
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RECOMMENDATION & COMMENTS:

	APPROVE		APPROVE *WITH* PROVISO		RWA		DENY

COMMENTS:

Typed/Printed NAME AND OFFICE SYMBOL **SIGNATURE**

DATE: _____ **Telephone Number:** _____

Proposed
TECHNICAL ASSISTANCE AGREEMENT

BETWEEN

HARRIS CORPORATION

and

Norweigan Space Center

And

Telnor, AS

Prepared 22 December 2000 by
Harris Corporation
Melbourne, Florida
PM/DTC Registrant/Applicant Code: 0501-3664

HARRIS

HARRIS CORPORATION

Corporate Headquarters
1025 West NASA Boulevard
Melbourne, FL USA 32919
phone 321.727.9220
fax 321.727.9638
email bartlett@harris.com

DTC Applicant Code 0501-3664

22 December 2000

Mr. William J. Lowell
Director
Office of Defense Trade Controls (PM/DTC)
U.S. Department of State
2401 E Street, NW, Annex SA-1
Washington, D.C. 20037

Dear Mr. Lowell:

I, the undersigned, am a U.S. person as defined in 22 C.F.R § 120.15, and I am a responsible official empowered by Harris Corporation to certify the following in compliance with 22 C.F.R. § 126.13:

1. Neither Harris, its chief executive officer, president, vice presidents, other senior officers or officials (e.g., comptroller, treasurer, general counsel) nor any member of the board is:

a. the subject of an indictment for or has been convicted of violating any of the U.S. criminal statutes enumerated in 22 C.F.R. § 120.27 since the effective date of the Arms Export Control Act, Public Law 94-329, 90 Stat. 729 (June 30, 1976); or

b. ineligible to contract with, or to receive a license or other approval to import defense articles or defense services from, or to receive an export license or other approval from any agency of the U.S. Government;

2. To the best of my knowledge, no party to the export as defined in Section 126.7(e) has been convicted of violating any of the U.S. criminal statutes enumerated in 22 C.F.R. § 120.27 since the effective date of the Arms Export Control Act, Public Law 94-329, 90 Stat. 729 (June 30, 1976) or is ineligible to contract with, or to receive a license or other approval to import defense articles or defense services from, or to receive an export license or other approval from any agency of the U.S. Government, and

3. The natural person signing the application for the license or other request for approval is a responsible official who has been empowered by Harris and is a citizen of the United States.

Because the enclosed TAA application proposes only the provision of technical data and defense services, but no export of defense items, no list of consignors, freight forwarders, consignees, and intermediate consignees is enclosed.

Respectfully submitted,

James E. Bartlett III

JAMES E. BARTLETT III
SENIOR COUNSEL
DIRECTOR, EXPORT/IMPORT COMPLIANCE

HARRIS

HARRIS CORPORATION

Corporate Headquarters
1025 West NASA Boulevard
Melbourne, FL USA 32919
phone 321.727.9220
fax 321.727.9636
email bartlett@harris.com

DTC Applicant Code 0501-3664

December 22, 2000

Mr. William J. Lowell
Office of Defense Trade Controls
PM/DTC, SA-1, 13th Floor
U.S. Department of State
2401 E. Street, NW
Washington, DC 20037

SUBJECT: Proposed Technical Assistance Agreement between
Harris Corporation, Government Communications Systems Division
and Norwegian Space Center and Telnor, AS

Dear Mr. Lowell:

Submitted herewith are seven copies of this letter and eight copies of a proposed Technical Assistance Agreement collated into eight sets, between Harris Corporation, through its Government Communications Systems Division (Harris GCSD), a U.S corporation, and the Norwegian Space Center and Telnor, AS, Norway, for the transfer of certain technical information and assistance necessary for the implementation of the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

Harris GCSD is a sub-contractor to Lockheed Martin Missiles & Space (LMMS) for the NPOESS Program. LMMS is under contract (Number F04701-00-C-0501) with the U.S. Government's Integrated Program Office (IPO), which is comprised of Department of Commerce, NASA and Department of Defense representatives. The LMMS Prime contract is for the Program Definition and Risk Reduction (PDRR) phase of the NPOESS Program. The IPO has two PDRR prime contractors, LMMS and TRW.

LMMS desires to exchange technical data and provide defense services to the Norwegian Space Center and Telnor AS relating to the use and development of the ground station site at Svalbard, Norway, for the collection of mission data from and the uplinking of commands and data loads to the constellation of the NPOESS and the NPOESS Preparatory Project (NPP) spacecraft; for the relay of this information to/from satellite control centers and data processing sites in the United States and for the preparation of a proposal, including negotiated subcontracts for the Engineering and Manufacturing Development phase of the program.

It is the intent of the IPO to provide access to the ground station site at Svalbard, Norway, to the contractor (either LMMS or TRW) selected for the Engineering and Manufacturing Development phase of NPOESS. The EMD contractor (either LMMS or TRW) will by necessity share information with their subcontractors (Harris GCSD or Raytheon) for the Interface Data Processor Segment (IDPS) development and support. Therefore the Norwegian Space Center and Telnor AS have to receive technical data and defense services related NPOESS.

In accordance with 22 CFR 124.12, the following information is provided:

(a)(1) The DTC applicant code is: 0501-3664

(a)(2) The licensees are the Norwegian Space Center, Dranmensveien 165, P.O. Box 113 Skoyen, N-0212, Oslo, Norway, and Telenor AS, headquartered at Universitetsgt 2, P.O. Box 6701, St. Olavs Pl, N-0130, Oslo, Norway. The disclosure of unclassified technical data will enable the licensees to determine the requirements, equipment, conceptual design and support needed to use the ground station site at Svalbard, Norway, for the collection of mission data from the uplinking of commands and data loads to the constellation of NPOESS and NPP spacecraft. NSC and Telenor will relay this information to/from satellite control centers and data processing sites in the U.S. The SOC will be located at Schreiver AFB and NESDIS in Suitland, MD. The data processing centers will be in Suitland, Offutt AFB Omaha, NE, FNMOC Monterey, CA and NAVOCEANO Bay, St. Louis MS. This Agreement is valid through 31 December 2008.

(a)(3) Harris has executed numerous space programs for U.S. Air Force and NASA customers who have content similar in nature to that being procured for the NPOESS Program. One example is the Defense Meteorological Satellite Program (DSMP) for the US Air Force, Contract Nos. F04701-84-C-0038, and F04701-87-C-0135. Our DMSP work for the air Force goes back to the mid-1960's. With regard to the retrieval algorithms, Harris has taken environmental parameter retrieval algorithms and used them so that meaningful weather information can be processed and displayed.

(a) (4) All data to be transferred will be unclassified.

(a) (5) There are no patent applications, which disclose any of the subject matter of the equipment or technical data, covered by an invention secrecy order issued by the U.S. Patent and Trade Office.

(a) (6) Harris is supplying an estimated value of $20,000,000 of data and services over the 8-year validity period of this agreement. This estimate is based upon the proposals submitted for the baseline and any additional options, which could be exercised over the term of the contract. No political contributions, fees, or commissions have been paid pursuant to ITAR Part 130. No offset agreement is proposed to be entered into in connection with the agreement.

(a) (7) There will be no foreign military sales, credits or loan guarantees involved in

financing the Agreement.

(a) (8) Not applicable. (There will be no classified data transferred under this Agreement.)

(a) (9) Not applicable. (There will be no classified data transferred under this Agreement.)

(b)(1) If the Department of State approves the Agreement, Harris will not construe such approval as passing on the legality of the Agreement from the standpoint of antitrust laws or other applicable statutes, nor will Harris construe the Department's approval as constituting either approval or disapproval of any of the business terms or conditions between the parties to the Agreement.

(b)(2) Harris will not permit the proposed Agreement to enter into force until the Department of State has approved it.

(b)(3) Harris will furnish the Department of State with one copy of the signed Agreement within 30 days from the date that the Agreement is concluded and will inform the Department of its termination not less than 30 days prior to the expiration and provide information on the continuation of any foreign rights or the flow of technical data to the foreign party. If a decision is made not to conclude the proposed Agreement, Harris will so inform the Department within 60 days.

(b)(4) If this Agreement grants any rights to sub-license, it will be amended to require that all sub-licensing agreements incorporate all the provisions of the basic Agreement that refer to the U.S. Government and the Department of State (i.e., 22 CFR 124.9 and 124.10).

To facilitate U.S. Government consideration of this request, the Agreement contains the following provisions currently required by the ITAR:

Pursuant to 22 CFR 124.7:

CFR Section	Agreement Reference
124.7(1)	Section I, paragraph 1, page 4
124.7(2)	Section I, paragraph 2, page 5
124.7(3)	Section I, paragraph 3, page 5
124.7(4)	Section I, paragraph 4, page 5

Pursuant to 22 CFR 124.8:

CFR Section	Agreement Reference
124.8(1)	Section II, paragraph 1, page 5
124.8(2)	Section II, paragraph 2, page 5
124.8(3)	Section II, paragraph 3, page 5
124.8(4)	Section II, paragraph 4, page 5
124.8(5)	Section II, paragraph 5, page 5
124.8(6)	Section II, paragraph 6, page 6.

No defense articles will be shipped in furtherance of this Agreement. Only technical data in the form of assembly specifications for units under consideration for procurement will be provided.

This agreement relates to the following U.S. Munitions List Category XV – Spacecraft Systems and Associated Equipment. This category is not designated as Significant Military Equipment (SME).

Harris Corporation has retained the law firm of Holland & Knight, LLP, Washington, DC, to represent Harris regarding this matter. Harris Corporation authorizes Ronald A. Oleynik, Esq., or any other attorney from Holland & Knight to act as our agent with respect to related ODTC licensing issues. If you should have any questions or require additional information concerning this Agreement, please contact me at (321) 727-9220.

Sincerely,

James E. Bartlett III
Senior Counsel
Director, Export/Import Compliance

Enclosures:

Eight copies of Proposed TAA
Including Letter of Transmittal and Certification Letter per ITAR 126.13

Enclosure 1.

Technical Assistance Agreement

Lockheed Martin Missiles & Space

August 22, 2000

TECHNICAL ASSISTANCE AGREEMENT

BETWEEN

LOCKHEED MARTIN MISSILES & SPACE,

NORWEGIAN SPACE CENTER, Norway

And
TELENOR AS, Norway

This Agreement is entered into between Lockheed Martin Corporation, a corporation of the State of Maryland, for its division Lockheed Martin Missiles & Space (hereinafter referred to as "LMMS") with offices at 1111 Lockheed Martin Way, P.O. Box 3504, Sunnyvale, California, United States of America, 94089-3504, the Norwegian Space Center (hereinafter referred to as "NSC"), Dranmensveien 165, P.O. Box 113 Skoyen, N-0212,Oslo, Norway, and Telenor AS (hereinafter referred to as "Telenor") headquartered at Universitetsgt 2, P.O. Box 6701, St. Olavs pl, N-0130, Oslo, Norway and is effective upon the date of signature of the last party to sign the Agreement. LMMS, NSC and Telenor are hereinafter referred to as the Parties.

WHEREAS, LMMS desires to exchange technical data and provide defense services to NSC and Telenor relating to the use and development of the ground station site at Svalbard, Norway for the collection of mission data from and the uplinking of commands and data loads to the constellation of the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) and the NPOESS Preparatory Project (NPP) spacecraft, the relay of this information to/from satellite control centers and data processing sites in the United States, and the preparation of a proposal, including negotiated subcontracts for the Engineering and Manufacturing Development phase of the program;

WHEREAS, The NPOESS Preparatory Project (NPP) is a joint NASA/NPOESS Integrated Program Office (IPO) mission which will bridge the NPOESS and Earth Observing System (EOS) missions;

WHEREAS the NPOESS program will use the same satellite ground sites to support the NPP and NPOESS spacecraft;

WHEREAS, LMMS is under contract (Number F04701-00-C-0501) with the IPO comprised of the Department of Commerce, NASA and the Department of Defense (see Statement of Work);

WHEREAS, the IPO will obtain their own import and export licensing from the Department of State as required;

WHEREAS , the Svalbard, Norway satellite ground station is owned and operated by the Norwegian Space Center;

WHEREAS, NSC and Telenor desire to receive technical data and defense services related to the use of the ground station site at Svalbard, Norway for the collection of mission data from and the uplinking of commands and data loads to the constellation of NPOESS and NPP spacecraft, and desires to relay this information to/from satellite control centers and data processing sites in the United States, and to receive technical data necessary to prepare a proposal, including negotiated subcontracts, for the Engineering and Manufacturing Development phase of the program;

NOW THEREFORE, the parties desire to enter into this Technical Assistance Agreement as follows:

Technical Assistance Agreement is intended to enable LMMS to perform defense services and disclose technical data during the Program Definition and Risk Reduction (PDRR) Phase and the Engineering and Manufacturing Development (EMD)/Production Phase of the NPOESS Program in order to determine the requirements, equipment, conceptual design and support needed to use the ground station site at Svalbard, Norway for the collection of mission data from and the uplinking of commands and data loads to the constellation of NPOESS and NPP spacecraft. NSC and Telenor will relay this information to/from satellite control centers and data processing sites in the United States.

NPP

NPP is a joint IPO/NASA mission intended to bridge the NPOESS and NASA Earth Observing System (EOS) missions. NPP will provide primary end-to-end risk reduction *and validation for 3 of the 4 mission critical NPOESS sensors and data continuation for* NASA global change observations. If LMMS wins NPP, LMMS will provide the bus, integrate the sensors and launch the satellite. After launch LMMS will turn over control of the satellite to the IPO. If in addition, LMMS wins the Engineering and Manufacturing Development phase of the **NPOESS** contract, LMMS will have the added responsibility of providing to the NPP program the Interface Data Processing System (IDPS), ground control and 2 sensors- the Visible Infrared Imaging Radiometer Suite (VIIRS) and the Cross-Track Infrared Sounder (CrIS).

There are several phases to the NPOESS program:

(i) The Program Definition and Risk Reduction Phase

LMMS is currently under contract - number #F04701-00-C-0501 - with the IPO. The contract is for the NPOESS Program Definition and Risk Reduction (PDRR) phase to define the system including the requirements, functional analysis and conceptual designs to provide a single, national polar-orbiting remote sensing capability that will acquire, receive, and disseminate global and regional environmental data. A similar competitive PDRR contract was awarded to TRW by the IPO, and a competitively selected contract will be awarded for the EMD phase of the NPOESS program, currently scheduled for March 2002.

The PDRR phase includes three elements. One element of the PDRR phase entails reducing the risk associated with integrating the five NPOESS sensors onto the baseline of the LMMS satellite. The second element is the development of a conceptual design for ground sites used to communicate with the satellites and to relay this information to/from sites in the United States. The third element is the preparation of a proposal for the execution of the EMD phase of the program. The proposal effort will include the negotiation of subcontracts with all subcontractors, including sensors and ground support facilities. The PDRR phase will end on 30 March 2002 or, if an option to the contract is exercised, on 31 December 2002.

The primary exchange of information to be carried out under this TAA will take place during the PDRR phase of the NPOESS program - namely from the date of execution of an approved TAA through 31 December 2002. The exchange of data includes (1) requirements for satellite contact coverage including satellite orbital information, frequencies, data rates and data formats for the proposed NPOESS spacecraft, (2) potential antenna design information (drawings and specifications) for potential installation of additional antennas and associated electronic equipment at Svalbard, Norway, (3) electronic communications equipment descriptions and requirements, including receiver, transmitters and associated data handling electronics, (4) information and requirements for interfaces to communications satellite or fiber optic data transmission services (Svalbard- United States), (5) requirements and descriptions of equipment and personnel accommodations, and (6) requirements and information about the support and services required to operate and maintain equipment at Svalbard.

In addition, technical data and assistance will be exchanged as required to support preparation of the proposal and negotiation of subcontracts for the EMD phase of the program and the initial period of the EMD phase if selected.

(ii) The Engineering and Manufacturing Development (EMD)/Production Phase

The next phase in the NPOESS program, EMD/Production, will call for the building of five satellites, ground stations, and data processing for system operations. During the EMD/Production Phase, LMMS will provide to NSC and Telenor under this TAA, technical data and services related to the installation of equipment at the Svalbard site.

If selected for EMD LMMS will amend this TAA to accommodate the export of hardware. LMMS will export equipment that will permit the Svalbard site to support a contact each orbit from every NPOESS spacecraft and will include antennas and associated electronics as well as the equipment necessary to forward the collected information to the data processing and control centers via COMSAT or fiber optic cable. Also, LMMS will install and operate additional antennas and electronic equipment at the Svalbard site. In addition, LMMS will provide the operational services required to run these sites when NPOESS goes operational in 2005 to support the NPP spacecraft. At EMD award, the IPO will transfer the responsibility for the design, upgrading, operation, and maintenance of the ground sites to the successful EMD/Production contractor.

2. It is understood that this Technical Assistance Agreement is entered into as required under U.S. Government regulations and, as such, it is an independent agreement between the parties, the terms of which will prevail, notwithstanding any conflict or inconsistency that may be contained in other arrangements between the Parties on the subject matter.

3. The parties agree to comply with all applicable sections of the International Traffic in Arms Regulations (ITAR) of the U.S. Department of State and that, more particularly, in accordance with such regulations the following conditions apply to this Agreement:

I. ITAR 124.7

(1) Data to be exchanged includes that necessary to establish a ground site at Svalbard, Norway with the capability to transmit commands and other information to the spacecraft and receive telemetry and mission data and to relay this information to/from sites in the United States. Such data includes: (1) requirements for satellite contact coverage, including satellite orbital information, frequencies, data rates and data formats for the proposed NPOESS spacecraft, (2) antenna design information (drawings and specifications) for potential installation of additional antennas and associated electronic equipment at Svalbard, (3) electronic communications equipment descriptions and requirements, including receiver, transmitters and associated data handling electronics, (4) information and requirements for interfaces to communications satellite or fiber optic data transmission services (Svalbard-United States), (5) requirements and descriptions of equipment and personnel accommodations, (6) requirements and information about the support and services required to operate and maintain equipment at Svalbard. (see attachment A, Statement of Work).

As currently envisioned, LMMS does not anticipate any requirement to export LMMS owned hardware in connection with this agreement during the PDRR phase of the contract. During EMD, LMMS does anticipate exporting hardware in connection with this agreement consisting of antennas, associated electronics as well as the equipment necessary to forward the collected information to the data processing and control centers via COMSAT or fiber optic cable. Also, LMMS will install and operate additional antennas and electronic equipment at the Svalbard site.

(2) All technical data and defense services transferred between NSC and LMMS under this agreement pertains solely to the definition and operation of the equipment necessary to support the NPOESS spacecraft using the Svalbard site for the uplinking of commands and the receipt of telemetry and mission data and the relay of this information to/from sites in the United States and does not represent a transfer of technical data or defense services specific to the design, manufacture, assembly or test of the NPOESS spacecraft itself. (see attachment A, Statement of Work).

(3) The agreement is valid through 31 December 2005.

(4) The effort intended to be accomplished under this agreement will take place in Norway, or the United States of America. There is no other country or area in which manufacturing, processing, sale or other form of transfer is to be licensed.

II. ITAR 124.8

(1) This Agreement shall not enter into force and shall not be amended or extended without the prior written approval of the Department of State of the U.S. Government.

(2) This Agreement is subject to all United States laws and regulations relating to exports and to all administrative acts of the U.S. Government pursuant to such laws and regulations.

(3) The Parties to this Agreement agree that the obligations contained in this Agreement shall not affect the performance of any obligations created by prior contracts or subcontracts which the Parties may have individually or collectively with the U.S. Government.

(4) No liability will be incurred by or attributed to the U.S. Government in connection with any possible infringement of privately owned patent or proprietary rights, either domestic or foreign, by reason of the U.S. Government's approval of this Agreement.

(5) The technical data or defense service exported from the United States in furtherance of this Agreement and any defense article which may be produced or manufactured from such technical data or defense service may not be transferred to a person in a third country or to a national of a third country except as specifically authorized in this Agreement unless the prior written approval of the Department of State has been obtained.

(6) All provisions in this Agreement which refer to the United States Government and the Department of State will remain binding on the Parties after the termination of the Agreement.

4. It is understood that disclosure of information by NSC and Telenor to LMMS is subject to any rules, restrictions or laws of Norway.

5. Technical data relating to this program may be exchanged with NSC and Telenor contractors/subcontractors provided that, prior to the release of any technical data, NSC and/or Telenor, executes a Non-Disclosure Agreement (NDA) with each company. The NDA will incorporate all of the provisions of the basic Agreement which refer to the U.S. Government and the Department of State (i.e., 22 CFR 124.8 and/or 124.9). Copies of the executed NDAs referencing this Agreement by number will be provided to and maintained by LMMS for five years from the expiration of the Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed effective as of the day and year above provided.

Lockheed Martin Missiles & Space
By _____

Printed Name _____

Title _____

Date _____

Norwegian Space Center
By _____

Printed Name _____

Title _____

Date _____

TELENOR AS
By _____

Printed Name _____

Title _____

Date _____

Attachment A

Statement of Work

August 22, 2000

Attachment A

STATEMENT OF WORK

Between

Lockheed Martin Missiles & Space (LMMS),

Norwegian Space Center (NSC), Norway,
And

Telenor AS (Telenor), Norway

TABLE OF CONTENTS

1.0 INTRODUCTION

This Technical Assistance Agreement is intended to enable LMMS to perform defense services and disclose technical data during the Program Definition and Risk Reduction (PDRR) Phase and the Engineering and Manufacturing Development (EMD)/ Production Phase in support of the determination of the requirements, equipment conceptual design and support needed to use the ground station site at Svalbard, Norway for the collection of mission data from and the uplinking of commands and data loads to the constellation of NPOESS and NPP spacecraft as well as the relay of this information to/from satellite control centers and data processing sites in the United States.

NPP

NPP is a joint IPO/NASA mission intended to bridge the NPOESS and NASA Earth Observing System (EOS) missions. NPP will provide primary end-to-end risk reduction and validation for 3 of the 4 mission critical NPOESS sensors and data continuation for NASA global change observations. If LMMS wins NPP, LMMS will provide the bus, integrate the sensors and launch the satellite. After launch LMMS will turn over control of the satellite to the IPO. If in addition, LMMS wins the Engineering and Manufacturing Development phase of the **NPOESS** contract, LMMS will have the added responsibility of providing to the NPP program the Interface Data Processing System (IDPS), ground control and 2 sensors- the Visible Infrared Imaging Radiometer Suite (VIIRS) and the Cross-Track Infrared Sounder(CrIS).

There are several phases to the NPOESS program:

(i) The Program Definition and Risk Reduction Phase

LMMS is currently under contract - number #F04701-00-C-0501 - with the IPO. The contract is for the NPOESS Program Definition and Risk Reduction (PDRR) phase to define the system including the requirements, functional analysis and conceptual designs to provide a single, national polar-orbiting remote sensing capability that will acquire, receive, and disseminate global and regional environmental data. A similar competitive PDRR contract was awarded to TRW by the NPOESS IPO, and a competitively selected contract will be awarded for the EMD phase of the NPOESS program currently scheduled for March 2002.

There are three elements of the PDRR phase. The first concerns the reduction of risk associated with integrating the five NPOESS sensors onto the baseline of the LMMS satellite. The second element of the contract is the development of a conceptual design for ground sites used to communicate with the satellites and relay this information to/from sites in the United States. The third element includes the preparation of a proposal and negotiated subcontracts for the execution of the EMD phase of the program.

The PDRR phase will end on 30 March 2002 or, if an option to the contract is exercised, on 31 December 2002.

The primary exchange of information to be carried our under this TAA will take place during the PDRR phase of the NPOESS program - namely from the date of execution of an approved TAA through 31 December 2002. The exchange of data includes (1) requirements for satellite contact coverage, including satellite orbital information, frequencies, data rates and data formats for the proposed NPOESS spacecraft, (2) potential antenna design information (drawings and specifications) for potential installation of additional antennas and associated electronic equipment as Svalbard, Norway, (3) electronic communications equipment descriptions and requirements, including receiver, transmitters and associated data handling electronics, (4) information and requirements for interfaces to communications satellite or fiber optic data transmission services (Svalbard- United States), (5) requirements and descriptions of equipment and personnel accommodations, (6) requirements and information about the support and services required to operate and maintain equipment at Svalbard, Norway.

(ii) The Engineering and Manufacturing Development (EMD)/Production Phase

The next phase in the NPOESS program, EMD/Production, will call for the building of five satellites, ground stations, data processing for system operations. During the EMD/Production Phase, LMMS will provide to NSC and Telenor under this TAA, technical data and services related to the installation of equipment at the Svalbard site.

If selected for EMD LMMS will amend this TAA to accommodate the export of hardware. LMMS will export equipment that will permit the Svalbard site to support a contact each orbit from every NPOESS and will include antennas and associated electronics as well as the equipment necessary to forward the collected information to the data processing and control centers via COMSAT or fiber optic cable. Also, LMMS will install and operate additional antennas and electronic equipment at the Svalbard site. In addition, LMMS will provide the operational services required to run these sites when NPOESS goes operational in 2005 to support the NPP spacecraft. At EMD award, the IPO will transfer the responsibility for the design, upgrading, operation, and maintenance of the ground sites to the successful EMD/Production contractor.

2.0 SCOPE

During the PDRR and EMD contracts with the IPO, Lockheed Martin Missiles and Space (LMMS) will exchange technical data and provide defense services to NSC and Telenor as necessary for the development of the requirements and conceptual designs for the antennas, communications equipment, interfaces to satellite or cable data communications providers, facilities and physical equipment and the support services necessary to support uplink and downlink contacts with NPOESS and NPP spacecraft. This TAA will enable LMMS, Telenor and NSC to disclose technical data and provide defense services in support of (1) development of the equipment and facilities needed to

support the uplink and downlink communications with the NPOESS and NPP spacecraft (2) development of the equipment and facilities needed to link these facilities with satellite communications or cable based data communications providers to relay the NPOESS mission data between Svalbard, Norway and NPOESS facilities located in the United States (the SOC will be located at Schreiver AFB, and NESDIS in Suitland, MD and the data processing centers will be in Suitland, Offit AFB Omaha, NE, FNMOC Monterey, CA, and NAVOCEANO Bay St. Louis MS) and (3) preparation of the proposal for EMD.

3.0 OBJECTIVE

The objective is to exchange technical data and provide defense services associated with the development of an operational satellite ground station capability at Svalbard suitable for supporting the NPOESS mission. The work includes information on the requirements for (1) ground antennas and related communications equipment, (2) electronics equipment and antennas needed to interface with data communications providers for the transfer of data between Svalbard, Norway and the United States, and (3) support and services for the operation of this equipment on an operational basis with all the required staffing, spare equipment and maintenance services.

Technical data to be exchanged includes, but is not limited to (1) requirements for satellite contact coverage including satellite orbital information, frequencies, data rates and data formats for the proposed NPOESS and NPP spacecraft, (2) potential antenna design information (drawings and specifications) for potential installation of additional antennas and associated electronic equipment at Svalbard, (3) electronic communications equipment descriptions and requirements, including receiver, transmitters and associated data handling electronics, (4) information and requirements for interfaces to communications satellite or fiber optic data transmission services (Svalbard- United States), (5) requirements and descriptions of equipment and personnel accommodations, and (6) requirements and information about the support and services required to operate and maintain equipment at Svalbard.

4.0 TASK DESCRIPTIONS

The following services and technical data are required to support the development of the requirements and conceptual designs for a satellite ground station at Svalbard capable of supporting every pass of a three satellite NPOESS/NPP constellation and the relay of the mission data to processing sites in the United States.

4.1 LMMS Interface Specifications and Requirements Applicable to Svalbard Satellite Ground Station

4.1.1 Description

Develop the requirements and Interface Specifications for the ground site at Svalbard. A sampling of the requirements and interface specifications in listed in Appendix 1 of this Statement of Work.

The task will include the following:

- Develop and flow down the requirements for the ground site at Svalbard to enable it to support the NPOESS and NPP mission. This includes:
  - equipment
  - facilities
  - staffing
  - maintenance
  - communications

- Develop an interface specification between the Svalbard ground site and the other elements of the NPOESS and NPP system. This interface specification will cover all interfaces to the NPOESS and NPP systems including:
  - Satellite
  - DRR (data relay to/from United States
  - Site infrastructure
  - Satellite control center

4.1.2 Approach

-LMMS will develop flow down of the generic ground site requirements.

-LMMS will develop interface requirement documents and identify interface issues.

-NSC and Telenor will provide information on the requirements and infrastructure of the Svalbard site.

NSC and Telenor will provide inputs, comment on and update the requirements documents.

4.1.3 Schedule

The review of the interface documents will occur between the date of execution of this approved TAA and March 2002.

4.2 Conceptual Design for the Equipment at the Svalbard Ground Station

4.2.1 Description

Develop a conceptual design, including equipment, conops and facilities and support plans for the operation of an NPOESS ground site at Svalbard to support the operation of the NPOESS and NPP spacecraft.

4.2.2 Approach

- LMMS will develop a conceptual design for equipment, conops and support
- NSC and Telenor will provide information on Svalbard facility and its support infrastructure
- NSC and Telenor will develop a support plan
- NSC and Telenor will comment and update the conceptual design, conops and support plan

4.2.3 Schedule

The review of the conceptual design will occur between the date of execution of this approved TAA and June 2001.

4.4 Host or Attend Meetings for the Exchange of Technical Data

4.4.1 Description

Attend technical interchange meetings involving the development of requirements, concepts, trade studies and preliminary designs for a satellite ground station at Svalbard

The task will include participation in the following types of reviews

- Design reviews
- Technical Interchange Meetings (TIMs)
- Test support reviews
- LMMS satellite baseline data

4.4.2 Approach

- At the request of the NPOESS Integrated Program Office, LMMS will attend reviews and technical interchange meetings that are required to develop Svalbard into an operational ground site capable of fully supporting the NPOESS and NPP missions.

4.4.3 Schedule

Interface meetings between NSC, Telenor and LMMS will occur between the date of execution of this approved TAA and June 2001.

5.0 DELIVERABLES

Reports of the major interchange meetings will be delivered to the NPOESS IPO within 30 days of each meeting. The first meeting is scheduled for September 2000. Subsequent interchange meetings are planned at approximately six-month intervals through December 2002.

Appendix 1
TECHNICAL DATA

The following documents are representative of the documents that will be furnished by LMMS to the Norweign Space Center and Telenor in order for LMMS to perform the tasks outlined in Attachment A, Statement of work; however, they may not be the specific documents to be provided.

Title	Type	Document Number
NPOESS System Performance Specification	Spec	TBD
NPOESS C3 Segment Performance Specifications	Spec	TBD
Communication Link Budgets	Engr Mem	TBD
NPOESS Concept of Operation	Doc	TBD
Specific Equipment Specification (antenna, receiver)	Doc	TBD